

## Table of contents

<b>1</b>	<b>Introduction.....</b>	<b>1</b>
1.1	Scope of the research project.....	2
1.2	Context of the research project.....	3
1.3	View on learning and teaching.....	8
1.4	Thesis outline.....	12
<b>2</b>	<b>Design of the study.....</b>	<b>13</b>
2.1	Introduction.....	14
2.2	Developmental research.....	14
2.3	Developmental research in this study.....	19
<b>3</b>	<b>Identification and exploration of learning and teaching problems in genetics.....</b>	<b>23</b>
3.1	Introduction.....	24
3.2	Reviewing the literature.....	24
3.3	Biology teachers' perceptions of learning difficulties in genetics.....	38
3.4	Explorative case study.....	41
3.5	Content analysis of school genetics.....	55
3.6	Towards a preliminary educational strategy.....	56
<b>4</b>	<b>Towards a solution: development of the 'yo-yo learning and teaching strategy'.....</b>	<b>63</b>
4.1	Introduction.....	64
4.2	Procedures and research context.....	64
4.3	The first case study.....	70
4.3.1	Designing the first learning and teaching strategy.....	70
4.3.2	Designing the scenario.....	75
4.3.3	The first scenario in practice.....	76
4.4	Second and third case study.....	91
4.4.1	Reshaping the learning and teaching strategy.....	91
4.4.2	Designing the second and third scenario.....	97
4.4.3	The second and third scenario in practice.....	101
4.5	Reshaping the second learning and teaching strategy.....	139

<b>5</b>	<b>The yo-yo learning and teaching strategy.....</b>	<b>143</b>
5.1	Introduction.....	144
5.2	Reflection on the yo-yo learning and teaching strategy.....	144
5.3	Further applications of the yo-yo learning and teaching strategy.....	154
5.4	Reflection on the design of the study.....	155
5.5	Future research.....	158
5.6	Final conclusion.....	159
	<b>References.....</b>	<b>161</b>
	<b>Appendices.....</b>	<b>169</b>
	<b>Summary.....</b>	<b>175</b>
	<b>Samenvatting.....</b>	<b>183</b>
	<b>Dankwoord.....</b>	<b>191</b>
	<b>Curriculum Vitae.....</b>	<b>195</b>
	<b>Publications.....</b>	<b>197</b>